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Document Name: TTMA RP-81: Performance of Spring Loaded Pressure Relief Valves

CFR Section(s): 49 CFR 178.345-10(b)(3)(i)

Standards Body: Truck Trailer Manufacturers Association

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THE EXECUTIVE DIRECTOR
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TTMA

Recommended Practice

RP No. 81-97
July 1, 1997

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Subject: **Performance of Spring Loaded Pressure Relief Valves on MC 306, MC 307, MC 312, DOT 406, DOT 407, and DOT 412 Tanks**
(Original Issue - June 29, 1990, Revised July 1997)

1.0 Preface:

1.1 Recommended Practices and Technical Bulletins are furnished by the TTMA as a guide to general practices in the manufacture, use, and repair of truck trailers. However, the scope of the TTMA's Recommended Practices and Technical Bulletins is not exhaustive of all general practices in the manufacture, use, and repair of truck trailers and there may exist such general practices which do not appear in either the Recommended Practices or Technical Bulletins.

1.2 Recommended Practices and Technical Bulletins represent the state-of-the-art that existed at the time of its preparation. Users of Recommended Practices and Technical Bulletins should familiarize themselves with advancements in practices that have occurred subsequent to the Recommended Practice's or Technical Bulletin's publication date.

1.3 The TTMA has not undertaken any evaluation of all the conceivable ways in which Recommended Practices or Technical Bulletins may be used by manufacturers, users, or repairers of truck trailers nor the consequences of such uses. Everyone who uses Recommended Practices or Technical Bulletins must first satisfy himself or herself that his or her safety, the safety of others, or the safety of the truck trailer and any other equipment will not be jeopardized by their use of information contained within the Recommended Practices or Technical Bulletins.

1.4 The Recommended Practices and Technical Bulletins may contain terms or words with specialized meanings. Definitions for such terms or words may be found in TTMA RP No. 36 - Tank Trailer and Tank Container Nomenclature or TTMA RP No. 66 - Trailer Nomenclature.

1.5 Within the Recommended Practices and Technical Bulletins, "shall" is used wherever conformance with the TTMA publication requires that there be no deviation from the specific recommendation. "Should" is used wherever deviation from the specific recommendation is permissible in complying with the TTMA publication.

1.6 Conformity with TTMA publications by manufacturers, users and repairers of truck trailers is voluntary and any non-conformity with such publications is not indicative of the non-conforming practice being deficient.

1.7 Any inclusion of Recommended Practices or Technical Bulletins within any contract, document or standard is voluntary, and any such inclusion shall not imply any endorsement or approval by the TTMA due to the multitude of ways in which the Recommended Practices or Technical Bulletins may conceivably be used.

2.0 Purpose:

2.1 This Recommended Practice is intended as a guide for determining the reseating capability of MC 306, MC 307, MC 312, DOT 406, DOT 407, and DOT 412 cargo tank pressure relief valves in a rollover condition.

3.0 Design Requirements:

3.1 Spring loaded pressure relief valves shall be capable of meeting the performance tests described in 5.0 of this Recommended Practice.

4.0 Test Equipment:

4.1 Drop test rig and sand box (See Appendix A).

4.2 Adapter for installation of pressure relief valves.

4.3 Lifting and release equipment.

4.4 A plastic bag or other suitable receptacle to collect water ejected during the test.

5.0 Test Procedure:

5.1 Stir sand to an even consistency before each drop.

5.2 Install the pressure relief valve to be tested to the drop test rig.

5.3 Place sufficient water in the vessel to provide a liquid head of 36 inches on the pressure relief valve under test. (Measure head from the pressure relief valve centerline).

5.4 Attach plastic bag to the pressure relief valve in such a manner as to collect all water ejected during the test.

5.5 Raise test rig and drop through a distance of 24 inches.

5.6 Remove the plastic bag and measure the water ejected during the test. The amount of water ejected may not exceed the limit specified by the applicable paragraph of 49 CFR 178.345-10(b)(3).

5.7 Within one minute of dropping, wipe off any water discharged and observe for any leakage. Any leakage greater than 5 cc per minute shall be considered a failure.

5.8 The pressure relief valve in the test rig shall be dropped three times and still meet the requirements of sections 5.6 and 5.7. Water ejected is not cumulative.

6.0 Marking:

6.1 The spring loaded pressure relief valve should be permanently marked with the name of the manufacturer and by stamping or other means as conforming with RP No. 81-97 where the last two digits indicate the year in which the latest version of the Recommended Practice was issued. A letter following the year indicates a revision in the same year.

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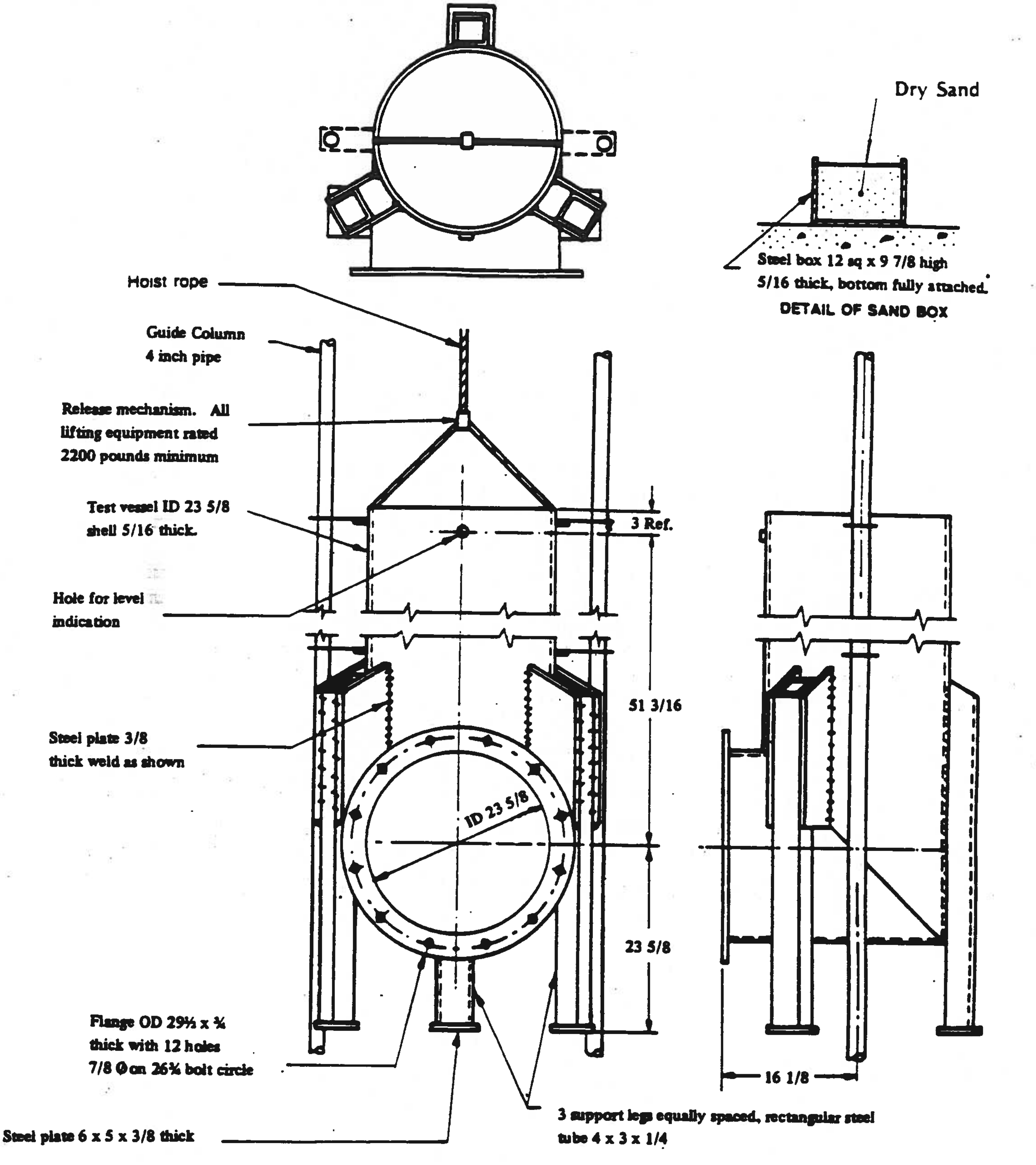
APPENDIX A - DROP TEST RIG

The Drop Test Rig is reproduced, with changes, from Australian Standard 2809.2-1985, "Road Tank Vehicles for Dangerous Goods, Part 2 - Tankers for Flammable Liquids", courtesy of the Standards Association of Australia. A copy of the Standard may be obtained from the American National Standar Institute, 1430 Broadway, New York, New York 10018 (212) 354-3300. The changes consist of deletio of the rubber pad on top of the sand box onto which the test rig is dropped and the type of sand, the level indicator hole, and rounding dimensions to fractions of an inch.



(Dimensions in Inches)